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THE OCCURRENCE OF *S. TYPHI-MURIUM* IN HEN EGGS AND ITS IMPLICATIONS

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In an addendum to a paper the present writer (Wilson, 1945) reported that the bacteriological examination of eggs from pullets and ducks naturally infected with *Salmonella thompson* had revealed the presence of the organism in several eggs, and it was thought that this was the first time that a Salmonella other than *S. pullorum* had been recorded in hens' eggs in this country and that *S. thompson* has been reported in ducks' eggs.

It was later confirmed (Wilson, 1948) that *S. thompson* may be present in freshly-laid duck eggs, but further experiments tended to suggest that its presence in the hens' eggs might have been due to penetration during the period of storage which was sometimes 14 days or longer. No attempt was made to keep the eggs apart from each other during this period so that contamination by contact may also have occurred. In all, 1,023 eggs were examined and *S. thompson* was isolated from 62; on the outside of the shell of 45 and in the contents of 17.

Buxton & Gordon (1947) examined 774 eggs laid by pullets and found infection on the shells of 5·4 per cent. of the untrapped eggs, whereas in trapped eggs only a single egg was contaminated. They failed to isolate *S. thompson* from egg meat.

Wilson (1945) showed, further, that the setting of infected eggs, the shells of which were contaminated with *S. typhi-murium* and *S. thompson*, was the means of introducing the disease into the incubator and suggested fumigation with formaldehyde gas as the most practical method of prevention, treatment to take place immediately after the eggs are set. This procedure has been successful in the large majority of outbreaks and on the few occasions where the disease persisted it was considered that infection had remained in some inaccessible part of the incubator probably as a result of faulty or inadequate fumigation. The possibility of occasional direct egg transmission was also pointed out (Wilson, 1945, 1948, 1949). The isolation of *S. typhi-murium* from the ovaries of a number of fowls appeared to lend support to this happening (two cases have been reported (Wilson, 1947)), and it was decided to investigate more fully outbreaks which did not respond to hygienic measures of control, including incubator fumigation.

PRESENT INVESTIGATION

Four flocks in which outbreaks of persisting infection due to *S. typhi-murium* have been investigated and in all four, reactors were present. From two of the farms it was not practicable to obtain reactors alive, but carcases were available from which *S. typhi-murium* was isolated from the ovary of some. From the remaining farms reactors were obtained alive, but as they were not in production they were sacrificed to obtain a bacteriological confirmation of the results of the agglutination tests.

From one of the farms an anaerogenic strain of *S. typhi-murium* was isolated from chicks sold from the farm, from chicks dying on the premises and from the ovaries of carriers. Several flock tests were carried out and invariably one or two reactors were present; they were obtained for examination. In some which were kept isolated the agglutination titre fell and bacteriological examinations were negative. In one pullet there was a particularly high titre and as it appeared to be coming on to lay it was retained alive. The titre was maintained and egg production commenced. Up to the present 30 eggs have been laid, from three of which, laid in succession, *S. typhi-murium* has been isolated from the yolk by the method previously described (Wilson, 1945), except that selenite broth (Leifson's) was used in place of brilliant green peptone water. As the time of laying was known it was possible to have each egg available for bacteriological examination within a few minutes, so that any possibility of penetration can be discounted.

In view of the importance of definite identification of the organism a second opinion was sought and subcultures of the organism isolated from the chicks and from the eggs were sent to the Salmonella Reference Laboratory. The following report was obtained from Dr. Joan Taylor: "The organism has the following antigenic structure: O=IV, V and XII; H=i-1, 2, 3. Therefore it is *Salmonella typhi-murium* (anaerogenic)."

DISCUSSION

The demonstration of *S. typhi-murium* in the contents of a hen's egg is of importance from two different aspects. Firstly, although its occurrence is obviously much less common than in duck eggs, many more hen eggs are consumed and might conceivably be a source of human food poisoning. Secondly, the presence of *S. typhi-murium* in even a small proportion of the eggs laid is a complicating factor of considerable importance in the control and prevention of the disease as at present practised.

It confirms the belief, previously based solely on circumstantial evidence, that direct egg transmission can occur and provides an adequate explanation of the occasional failures of fumigation previously attributed to faulty technique. It is now obvious that a programme of efficient fumigation cannot always afford complete protection.

Nevertheless, it is suggested as a result of experience gained since this procedure was first recommended, that when an outbreak is diagnosed in chicks and incubator infection is suspected a fumigation programme should be instituted immediately. If in spite of these precautions the disease persists, an agglutination test of the suspected flock should be carried out and all reactors removed.

It is recognised that agglutination testing alone is an unsatisfactory method of prevention as birds excreting the organism in the faeces may not react, but this type of

infection is adequately controlled by early fumigation of the eggs.

Birds having ovarian infection and thus most likely to be responsible for direct transmission show a higher titre when in lay than when the ovary is quiescent; the test, therefore, eliminates at the critical time this important potential source of infection against which fumigation is useless.

Except in an outbreak at the very outset of the hatching season, as a general rule, by the time a diagnosis is obtained at least two batches of the eggs in the incubator will be at a stage of development when fumigation is valueless and it may be considered desirable to dispose of all the remaining eggs, particularly if the outbreak has been severe and generalised throughout the hatch. In some cases a survey of the hatchability figures and mortality rate may point to eggs from a particular farm as the source of infection, and it may be sufficient to remove these eggs from the incubator.

Also pullet eggs are a more likely source of infection than those from hens and it may be possible to segregate such eggs and hatch them separately.

Summary

The isolation of *S. typhi-murium* from hens' eggs is recorded. Fumigation, as soon as practicable after eggs are set, is usually an effective method of prevention of the disease in the incubator. Where it fails direct egg transmission is likely and a combined programme of agglutination testing and fumigation is recommended.

Acknowledgments.—I wish to acknowledge my indebtedness to my colleagues, Mr. J. W. Wilson and Mr. G. Ord, and Mr. J. Reid and Mr. E. A. McPherson of the Animal Health Division at Preston and Carlisle, respectively, for their interest and help in this investigation.

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POLO

"The general standard of play seen during the fortnight of polo at Roehampton, and on other grounds this summer has shown an immense improvement over last season," writes "Observer" in *The Horse and Hound.* "Although it is most unlikely that we shall ever see this grand game return to the position it occupied before the war, it has made a remarkable recovery in this country, in spite of an acute shortage of ponies.

"The one disappointing feature of the Roehampton Tournament was the lack of public support, although there was some improvement in the later stages. Before we hastily deduce from this that London polo no longer is a proposition, we must remember that, for almost ten years, London has had no opportunity of seeing the game played on any scale. Its people are as sport-minded as they are in the country, but with the many alternative attractions strong publicity is needed to enlist their support for what is, to many of them, a new game."

* * * * *

Weekly Wisdom

Copper sulphate is said to make cigarettes distasteful. I haven't tried it, but a dilute solution of silver nitrate is just as good. After using this as a mouth-wash I found that a cigarette tasted so terrible that after a few attempts I poured the mouth-wash down the drain and thankfully enjoyed my evening smoke, cancer or no cancer of the lung.—A *Lancet* "Peripatetic Correspondent."

MODERN ADVANCES IN WOUND TREATMENT

DISCUSSION BY THE CENTRAL VETERINARY SOCIETY*

The discussion was opened by an address from Professor J. Trueta, of the Wingfield-Morris Orthopaedic Hospital, Headington, Oxford.

Professor Trueta said that, if his experience of how to treat lesions in animals was extremely small, he had, on the other hand, an already long and painful experience with humans.

Since the beginning of the Spanish Civil War in 1936, he had been forced, by his position as Professor of Surgery in Barcelona, to treat many hundreds of war casualties. At the end of the Spanish struggle he came to this country, and after six months he again began treating war casualties. At the end of the war he had had ten years' experience in treating human casualties. It was of this human material he was going to speak, and he believed that, if veterinary surgeons applied his conclusions to their own sphere, it might be of some use to them.

One thing in the history of medicine that had struck him was that progress in wound treatment had been extremely slow until a few years ago. Of the wounded reported in the Iliad in 1000 B.C. one found that of the 147 injured by arrow and sword at least 114 died. The French surgeon, Larry, in the time of Napoleon, mentioned in his memoirs that, of some 45,000 casualties, 13,000, or 30 per cent., succumbed to their injuries. At the end of the American Civil War of 1870, two volumes of clinical histories were put together by workers from the two armies. In a group of 8,200 cases 1,639 died and 4,630 remained incapacitated for life.

All this showed how slow progress had been during those centuries. In the 1914-1918 war a large number of casualties still died of wounds, but in the last war, while the number of casualties was large, mortality amongst them was much diminished. He thought the reason was that in each war the right principles of treatment were arrived at only after many lives had been lost. Only at the end of the war was there some profit. Hitherto, between wars these principles were forgotten, and having started again wrongly, surgeons learned by painful experience. They had not done that in the last war. They had not changed the principles, but improved them.

Time was important when dealing with war casualties as with any type of accidental open wounds. This principle was pointed out by Larry, the inventor of the ambulance, during the Napoleonic campaign in Italy. Wounds must be treated before sepsis intervened or gangrene would set in. In the first World War hospitals were well supplied, but the casualties had to be brought in to the surgeon. In the last war they sent the surgeon to the wounded and the treatment was done in shorter time.

The best condition for success in healing was to have a good blood supply to the injured tissues. That was described by the Italian surgeon Botallo in the sixteenth century, and later by the French surgeon Desault, who proved that dead tissue was the real factor producing pus and gangrene, and that foreign bodies must be removed. This was forgotten at the time of the First World War until Milligan proved that we must remove every fragment of disorganised tissue. In the last war surgeons knew that and it was easier to emphasise the principle.

* Meeting held at the Royal Veterinary College on May 5th, 1949.

Another important point was immobilisation. It was the oldest principle of the treatment of injuries, but it had been forgotten for centuries. In the First World War Robert Jones introduced the Thomas splint, but in the last war we used plaster. The speaker had been responsible for the use of plaster in fresh wounds. He had used it in Spain before coming to this country and he had done experimental work with it at Oxford. Here, with J. M. Barnes, he had investigated the rôle of immobilisation to prevent the spread of sepsis. With plaster they had immobilised the hind limbs of rabbits. Through small windows at the level of the middle of the leg, they had watched the reaction when they injected toxins and snake poisons. After injection of tetanus toxin the animals did not suffer from tetanus spasms and survived for nine days or longer. If, after five days, they removed the plaster the animals died soon afterwards. Part of the toxin was neutralised during the time the plaster was in position as diffusion and absorption were almost prevented.

Immobilisation, in the treatment of accidental wounds, must, however, be accompanied by two other requisites or principles. The importance of antibodies in the blood to fight bacteria was well known. Tissue fluids maintained their antiseptic power only when circulating, whereas the fluids retained within the tissues, or in cavities in the tissue spaces, would alter and act as foreign bodies. Drainage, therefore, was an essential part of immediate treatment. Many people thought that drainage was intended to remove pus. The importance of drainage was to prevent the formation of pus by removing the fluid which was not circulating and which eventually would become pus.

The last principle referred to cleaning. Before beginning their work all surgeons washed their hands with soap and water. It was not illogical, therefore, to clean wounds in a similar way. The best method was to use soap from coconut, or one of the detergents, such as cetavlon. The wound should be cleaned, and clots and foreign bodies removed, while the patient or animal was under an anaesthetic. The surgeon must then examine and explore the wound for deeper foreign bodies or dead tissue. These must be removed with a pair of scissors (not a knife). The clean tissues would bleed and that was why drainage was necessary, not to remove pus, but fluids which would be pus without drainage.

Calico mesh was the best material to get in the wound. Ordinary gauze was a failure because it became invaded by the granulations and caused damage when removed. It also left foreign bodies in the tissues, in the form of little bits of cotton. Two or three layers of a good type of close mesh calico should be used to cover the wound and on top of that the plaster to immobilise the limb. Plaster which moved up and down even slightly was an irritant and did damage. A well-moulded plaster should, therefore, immobilise the limb completely. Before surgeons had penicillin the treatment was to leave the wound covered for some time and to remove the plaster and the few sutures later. Since surgeons had penicillin at their disposal it was unnecessary to delay secondary sutures or skin grafts, which should be performed in from four to ten days.

[Professor Trueta then showed slides of cases he had treated in Spain and in England, and explained in detail how the dead tissue was removed and how the limb was immobilised. He said that several hundred cases had been collected at Oxford and they had only one amputation. This tremendous improvement in results was due to the work of those surgeons and doctors who extracted from their practices and from their experimental work in animals, the necessary lessons on how nature works. The research on immobilisation in rabbits and dogs was done experimentally at Oxford in 1940. In 1939 Florey and Chain began working on penicillin at Oxford. They attempted to find a substance which would not kill biochemically by lysis or by coagulation, but which would, nevertheless, be antibacterian and help in the treatment of casualties. This experimental work in animals ended by isolating and stabilising penicillin.

The basic work underlying many of the new medical advances, while interesting mainly to medical men, ought to be equally attractive to veterinary surgeons. It is proof of this interest that Professor Trueta is now performing medical research in animals at the Royal Veterinary College.]

General Discussion

Mr. McLauchlan: Twenty years ago, he had a similar experience to that recounted by Professor Trueta, with a compound fracture of a dog's leg. He used soap (coconut oil soap) to clean the wound and then applied plaster of paris. The animal made a wonderful recovery. Afterwards he discarded antiseptics and used soap; although he was told he was not up to date, he stuck to soap.

Mr. Hodgman asked Professor Trueta if he would tell them something about secondary haemorrhages in these cases. If they did occur, how should they be dealt with?

Professor Trueta: One of the experiences of the last war was the rarity of secondary haemorrhages beneath the plaster. In this country he had had over a thousand cases of compound fracture and carrying out his procedure in the majority of cases, he had only one secondary haemorrhage. The blood vessels were preserved by preventing sepsis. He thought that the protection of the plaster was sufficient to prevent serious traumatic secondary haemorrhage caused by disturbing the wound.

Mr. Underwood asked the best way to treat wounds of joints and the length of immobilisation recommended.

Professor Trueta: The resistance of the joint against sepsis was greater than the resistance of ordinary muscle and bone. Synovial fluid was a powerful antiseptic and the wound should be stitched immediately after operation. The use of soap and water would remove any foreign matter, such as clotting. Suturing of the wound should be done when it was not older than 24 hours, because sepsis would be present after that time. He recommended the use of soap and water, exposure of the joint, removal of foreign bodies and suturing the synovial membranes and skin. Next the injection of 100,000 units of penicillin in 5 c.c. of distilled water into the joint. Next day another 100,000 units of penicillin must be injected and the limb immobilised with a complete plaster. With that treatment they were likely to get good results every time.

Mr. Underwood: He had had a case of a horse which had staked its fetlock joint. He had bandaged the joint and held the limb up. There was a small incision in the skin.

Professor Trueta: If there was a small puncture he would make a relatively long incision, clean it with soap and water, and then try to suture and immobilise as much as he could.

Dr. Ottaway referred to the work of Le Gros Clark at Oxford with rabbits, particularly with regard to the blood supply of muscles. What did Professor Trueta think of the importance of end arteries in muscle injuries?

Professor Trueta: He had watched the progress of some of this work. His experience was that in a contaminated wound, muscle, deprived of its blood supply, would die before giving time for regeneration. His experience in war cases was exactly the reverse of Le Gros Clark's in animals because his wounds were all contaminated. He did not remove the muscle which still had blood; he only removed a portion. Observation would show more or less where the blood supply ended and the treatment was the removal of the dead muscle by the use of scissors.

Mr. Singleton: He had treated a compound fracture of the tibia in the way described. The dog was in considerable pain for the first two days; the pressure due to oedema was great. This was because it was not possible to immobilise the joint in a fixed position, as was practised in human beings. He wondered if there was any advantage in using a light, elastic bandage for the first two or three days and replacing it later by a cellona cast.

Professor Trueta: In human cases it was possible to prevent oedema by elevation of the part. With an elastic bandage there was a certain amount of pressure, but it must be complemented by a plaster slab which would allow room for swelling. The plaster

could be completed in from three to four days. Under the conditions in which veterinary surgeons worked, he would use soap and water, drainage for two or three days, with the wound left open and an elastic bandage. He would remove everything after four or five days and suture the wound, immobilising it with plaster.

Mr. McLauchlan: He had had a compound fracture which he cleansed with soap and water, afterwards applying a corrugated paper splint and then a tight bandage. You might have to replace it in a day or so, but the corrugated paper moulded to the shape of the leg.

Mr. Limont asked if Professor Trueta had had any experience of metal screws for immobilising compound fractures.

Professor Trueta: He had two or three cases plated a fortnight after healing, and some six weeks after wounding. After complete healing of the skin they submitted the cases for local massage. The massage was done to stimulate any bacteria which might be hiding "silently" in the wound. As always, success depended upon the quality of the first treatment. If the wound had been clean with no reaction, then it could be massaged within six weeks without difficulty and the plating done under penicillin covering.

Mr. Pay: The experimental work on rabbits suggested that tetanus toxin was conveyed by the nerve, but Professor Trueta had suggested that the immobilisation of a limb stopped the transit of tetanus toxin.

Professor Trueta: It had been proved that the distribution and absorption of tetanus was not through the nerve. Dr. J. M. Barnes and himself knew, before beginning their work on snake venom, that there was some absorption through the capillaries into the blood stream and some through the lymphatics. They had found that Hunter had been right and that Magendie had been wrong. They gave an injection of strychnine to the rabbit after the lymphatics had been tied. The rabbit died with convulsions within ten minutes, which meant that the strychnine went across the capillary wall. They used snake venoms of different molecular sizes, black tiger 20,000, cobra 3,000 and viper 30,000. They found that strychnine and cobra venom, being of a molecular size under 3,000, went through the capillary wall and the others through the lymphatics. Tetanus did not enter through the capillaries. They had found that, if they prevented movement, the animal survived as immobilisation decreased lymphatic absorption. A paper in America recorded the case of a compound fracture which was put in plaster. The plaster was removed after six weeks and the patient died from tetanus within two or three days. It showed that they were right in assuming, from their experiments with animals, that absorption was through the lymphatics.

Miss R. Welch asked how long it was before the limb was placed in plaster and what had been the most satisfactory way of applying penicillin locally. Regarding oedema in wounds, was there anything else which would prevent it, when the patient was walking about again, and if it occurred, what was to be done about it?

Professor Trueta: With compound fractures there was the problem of treating them as wounds and then treating them in plaster. The use of penicillin allowed of an early suture of the skin or graft within four to ten days. Secondary oedema was very rare. Penicillin treatment was administered both locally and systemically. At the time of operation they should clean the wound with soap and water and put in penicillin powder. The remainder of the treatment must be systemic.

Dr. G. Slavin enquired if there was any good reason for dusting penicillin on to the types of wounds he described. Absorption of penicillin was so rapid that it would disappear very quickly and have little or no local effect. Soap was a most undesirable substance to have in contact with penicillin. Was the soap removed after the wound had been cleaned?

Mr. Gourley also asked if the soap was removed from the wound.

Professor Trueta replied that the soap was removed with water. If the soap was too acid or too alkaline it was irritant and should not be used.

Mr. Barlow: Was anything done about the prevention or removal of scar tissue to help in the healing of the wound?

Professor Trueta: Excessive scar tissue was essentially a reaction to sepsis. To prevent sepsis the best device was to remove with care all devitalised tissue. The problem of haemorrhage was similar to that related to sepsis. If the wound was dirty it might produce necrosis of the arterial wall and haemorrhage. If the wound was clean from the beginning one would get no secondary haemorrhage.

Mr. Barton: If a bandage was put round the leg of a cat or dog it would swell up to twice the normal size. Would it then be best to put the whole leg in plaster? He would like to know what other factors to look for.

Professor Trueta: For the prevention of oedema the best thing was to have a large part of the body immobilised. The thigh must be in plaster in cases of wounds of the foot. Immobilisation prevented the spread of sepsis and if the wound was free from sepsis there would be no oedema.

Mr. McLauchlan said he thought it best to have the leg and the foot completely immobilised.

This closed the general discussion and a vote of thanks to Professor Trueta was proposed by Mr. T. L. Wright, who had introduced it by saying that it had been a great treat to listen to Professor Trueta and that they were indebted to him for giving them the benefit of his experience.

Equine Pregnancy Diagnosis *

BY

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Mr. Crowhurst pointed out that the demand for equine pregnancy diagnosis had increased in recent years because of the lack of expert grooms, the increase in value of many horses and the increased knowledge of infertility despite the fact that there was much less breeding than formerly. He was not concerned with pregnancies of longer than seven months' duration as the condition was then fairly obvious to the naked eye. The longest gestation period of which he had knowledge was one of 500 days in America. Mr. Crowhurst divided his methods of pregnancy diagnosis into (1) manual, per rectum, and (2) by laboratory tests.

Manual Methods of Pregnancy Diagnosis

This was the method chiefly employed by the speaker, as it gave earlier results than the laboratory tests. Although he did occasionally get a mare that was too vicious to examine per rectum, and had, on one occasion, known the rectal mucosa to be ruptured, in the vast majority of cases he found this method a perfectly safe and satisfactory one and with a little practice easier than in the cow. For the majority of mares he used only limited restraint: a bridle with bit in the mouth held firmly by a man at the head, a second man holding the tail, and the mare preferably backed across the open doorway of a loose box. He did not think that either side-lines or bales of straw were necessary; examination over a half-door was dangerous. Mr. Crowhurst then demonstrated a *post-mortem* specimen of a mare's normal uterus and ovaries, drawing attention, as follows, to the points of difference from the cow. The body of the uterus is much larger, with the horns forming a "T" leading to the ovaries, which are placed just within the shafts of the ilium, *i.e.*, much more laterally than in the cow. In the mare the non-gravid organ is wholly contained within the pelvis so that the arm need only be inserted into the rectum up to the elbow in order to palpate the ovaries. It is most important to make sure that the rectum has been emptied of faeces before commencing the examination. Mr. Crowhurst's method was to insert his well-lubricated arm well forward and pick up the right ovary as he withdrew. He then felt his way in along the right horn of the uterus and up the left horn to the other ovary. He emphasised that it is the anterior border of the uterus in which the early changes of pregnancy can first be detected. If the pubis can be felt below the uterus it is unlikely that the mare is in foal.

For routine examination Mr. Crowhurst preferred the 42nd to the 50th day and looked primarily for a change of tone in the gravid horn, which became rounded and tense instead of fat and flabby. Implantation usually takes place at the base of the horn where it can be detected as a bulge about the size of an orange at the 42nd day.

At 60 days it is about the size of a football and occupies most of the horn except for about 2 inches at the tip.

At 80 days the foetal unit has extended into the body of the uterus and the non-pregnant horn is difficult to detect.

By 100 days the ovaries have been dragged down to the mid-line and are suspended from the dorsal wall of the abdomen by taut ovarian ligaments. The distended body of the uterus can now easily be felt *under* the fingers.

* Report of an address given to the Southern Counties Division, N.V.M.A., at Winchester, March 1st, 1950.

From the 150th day the foetus itself can be detected.

The state of the ovaries is not a guide, as it is in the cow, as they undergo numerous and complex changes in early pregnancy. There is no "thrill" in the uterine arteries, there are no cotyledons and the foetal membranes cannot be detected as in the cow. The vagina in the pregnant mare is usually blanched and leaves a gummy secretion on the vaginascope. Differential diagnosis includes a distended bladder which may be mistaken for a ballooned uterus; small lumps of faeces in the small colon can be differentiated from ovaries by gently kneading them until they disintegrate; pyometra is very similar to a 100-day pregnancy but it is very rare indeed.

Implantation in the body of the uterus occurs occasionally and may be difficult to detect at 42 days but should be easily recognisable on re-examination after an interval of 14 days.

Twins can be diagnosed between 40 and 60 days if in different horns. One is usually resorbed or aborted. Early abortion or resorbtion of even a single foetus is quite common (about 2 to 3 per cent.). Abortion is very easy for the mare, occurring without symptoms, and may leave no traces.

Laboratory Tests for Pregnancy

These depend on the presence of gonadotrophin in the blood from 42 to 140 days and subsequently on the presence of oestrogens in the urine. The tests may be either chemical or biological and are most accurate when they give a positive result—although such results may not be obtained for some weeks after abortion. Such tests are carried out at several centres including the Edinburgh Veterinary College.

. . . . . .

An interesting discussion was introduced by Major C. Davenport, who recommended the use of side-lines for restraint during examination.

Points raised by the many speakers included the fact that the most critical time for early abortion was about 70 days, with false oestrous occurring in the pregnant mare as well as the cow, and that udder development and secretion was a very good guide to the later stages of pregnancy.

DISEASES OF ANIMALS ACTS, 1894 TO 1937, AND AGRICULTURE ACT, 1937 (PART IV).

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period	Anthrax	Foot-and-mouth	Fowl Pest	Parasitic Mange*	Sheep Scab	Swine Fever
June 16th to 30th 1950	12	—	6	—	—	14
Corresponding period in—						
1949	4	—	36	—	—	—
1948	—	—	16	—	—	3
1947	3	6	92	—	2	1
Jan. 1st to June 30th, 1950	211	14	87	—	19	22
Corresponding period in—						
1949	100	11	285	—	28	5
1948	47	—	206	1	26	20
1947	47	98	542	1	25	16

Note.—The figures for the current year are approximate only

* Excluding outbreaks in Army Horses.

Tuberculosis (Attested Herds) Schemes

The number of Attested Herds, *i.e.*, herds officially certified as free from Tuberculosis as at June 30th, 1950, was as follows:—

England	Wales	Scotland	Total (Great Britain)
22,184	14,652	12,825	49,661

CLINICAL COMMUNICATION

THE USE OF AMPHOTROPIN (BAYER'S BRAND OF HEXAMINE CAMPHORATE) IN THE TREATMENT OF HARD-PAD DISEASE IN DOGS

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Norwich

Since Greatorex[1] made a preliminary report on the successful use of Amphotropin (Bayer's brand of hexamine camphorate) in the treatment of two cases of so-called hard-pad disease in dogs, the writer has employed the agent in 35 consecutive cases of this disease with encouraging results. To obviate wearisome repetition of clinical details in the subsequent case histories, it is proposed to group the cases into the categories suggested by Singleton and Potter.[2] These writers divided cases of nard-pad disease into the four categories here recapitulated, with symptoms, as follows:—

Early Stage.—Slight to moderate tonsillar enlargement, with possible enlargement of the submaxillary lymph glands, also mild laryngitis, causing a husky cough. Anorexia, listlessness, diarrhoea, occasional vomiting. Temperature very variable, but usually between 103·5° and 105°.

Less commonly a change of temperament is noted, the animal being slightly more affectionate with its owner, but more nervous when outside or with strangers.

Middle Stage.—Periods of health alternating with the above symptoms. Possible congestion of the lungs; appetite very variable; some hardening of the pads, usually commencing around the edges. Lymphatic glands in the head region enlarged but not painful. The prescapular and popliteal lymph glands frequently enlarged and painful for several days. Temperature usually 102·5° to 103·5°.

Last Stage.—(*a*) No nervous symptoms. At this stage the animal frequently is extremely emaciated. Nostrils and pads are usually hard and cracking, appetite usually poor, but a sudden voracious appetite often follows a period of anorexia; this change usually precedes the onset of nervous symptoms by three or four days. Extreme listlessness often is noted, also excessive scurfiness of the skin.

Last Stage (*b*).—Serious involvement of the nervous system; mild to violent fits, paralysis, chorea, blindness. Frequently before the fits commence there appears to be a progressive involvement of the third and sixth cranial nerves, later the seventh and eighth (usually vestibular branches). Pads frequently hard and peeling.

To these symptoms the present writer would add the important ones of shivering attacks, intense and diffuse reddening of the sclerotic of the eye and frequent attacks of panting. Auscultation of the thorax during attacks of the last-mentioned symptom fails to reveal any sign of organic pulmonary disease and the writer is of the opinion that the attacks are due to some interference with the nervous control of respiration, possibly by inhibition of the vagus. Possibly the intense reddening of the sclerotic is a sign of congestion of the central nervous system. In any event, it would seem to be a point of considerable diagnostic significance. The writer has been unable to find the haemorrhages in the fundus of the eye described by Uvarov[3] as being one of the earliest diagnostic features of the disease.

Before amphotropin was used, the vast majority of such cases died or were destroyed, but the use of this compound

has definitely improved the prognosis considerably in cases where severe nervous symptoms are not yet in evidence. Of the thirty-five cases subjected to amphotropin therapy by the writer, twenty-four made a complete clinical recovery, eight were destroyed and three animals died during treatment.

In the writer's experience the most important feature of amphotropin therapy is the necessity for its institution early in the disease, even before the diagnosis is definite, otherwise losses occur. A good plan to adopt is that where there is a bilateral and intense congestion of the sclerotics with an accompanying malaise, especially shivering attacks, commence amphotropin therapy.

Once severe nervous symptoms appear the prognosis is very grave. Greatorex[1] originally advocated the use of amphotropin in cases showing severe nervous involvement, on the pharmacological basis that the compound was capable of traversing the blood/brain barrier and so of acting directly on the virus in the central nervous system. He described two such cases in which amphotropin treatment was successful. In the present writer's experience, in only two cases showing severe nervous symptoms has recovery occurred.

Bayer's recommend that the compound should be injected intravenously at 48-hour intervals in doses of 2, 4, 6, and 8 c.c. The time interval between the injections would appear to be somewhat arbitrary as in one case, owing to a misunderstanding, only two injections were made, but the animal made a good recovery, improvement commencing 48 hours after the last injection. This case suggests that a longer interval between the injections may make the treatment more effective. In another case, which failed to respond to a course of four injections, a further course of four injections was administered without effect. It would appear, therefore, that where an animal fails to respond to the usual number of injections, further injections are useless. It is possible that in the case of larger animals larger doses could be employed with advantage, as in some of these animals improvement was not really noteworthy until after the administration of the third (6 c.c.) dose. Full emphasis must be placed on the warning that the agent must be administered slowly; in one case severe shock was induced by the too rapid injection of the compound and the animal died, despite the most vigorous resuscitative measures. During injection the heart beat is accelerated, the animal becomes uneasy, licks its lips, and may appear to be slightly dizzy on completion of the injection. Two cases showed some degree of haematuria during the period of amphotropin treatment, but this feature disappeared upon the cessation of treatment and the animals made a complete recovery. There is also some evidence that the agent has a slight aphrodisiac effect in the male dog.

Summarised Case Reports

The features of the 35 cases are set out below:—

Case 1.—18-month Labrador dog.

25.8.49. Late middle stage, main symptoms being cough, diarrhoea, anorexia, shivering, pads hard. T.102·5°. Had been treated with distemper serum, penicillin, etc., without result. A course of amphotropin administered, the animal showing progressive improvement until completely normal, 12.9.49.

Case 2.—Three-year Labrador bitch.

24.9.49. Early stage, main symptoms being slight malaise, diarrhoea, shivering attacks, T. 103·5°. Amphotropin therapy adopted with progressive improvement in the animal's condition. Animal apparently normal, except for slight choreic movement of the masseter muscles, 15.10.49.

Case 3.—Two-year Labrador dog.

8.12.49. Early middle stage with cough, listlessness, diarrhoea, anorexia. Amphotropin therapy gave progressive improvement and animal had made a complete clinical recovery by 4.12.49.

Case 4.—Four-year Labrador dog.

1.12.49.—Early stage, shivering, inappetence, slight diarrhoea. Complete clinical recovery by 27.12.49 under amphotropin therapy.

Case 5.—Four-year Dachshund dog.

9.12.49.—Late stage with epileptiform convulsions, cough, extreme depression and complete anorexia. Amphotropin therapy instituted, but there was a gradual deterioration in the animal's condition until it died in convulsions, 22.12.49.

Case 6.—Three-year Cocker Spaniel bitch.

15.12.49. Middle stage with emaciation, complete anorexia, listlessness, cough and diarrhoea. T. 103°. Amphotropin therapy commenced with progressive improvement and animal apparently normal, 3.1.50.

2.2.50. Slight extensor paralysis of the left hind leg reported, but this responded very well to massage and arsenical tonics.

Case 7.—Four-year Cocker Spaniel dog.

19.12.49. Late middle stage; cough, complete anorexia, listlessness. Amphotropin therapy instituted with apparent improvement at first, but later the animal relapsed to its former condition.

4.1.50.—Late stage. Another course of amphotropin was administered, but with no apparent improvement in condition and with the onset of paraplegia the animal was destroyed, 15.1.50.

Case 8.—Five-year Labrador dog.

21.12.49. Early stage, with malaise, slight cough, inappetence and shivering attacks, T.104°.

Amphotropin administered with success, the animal being apparently normal on 7.1.50.

Case 9.—Four-year Greyhound bitch.

22.12.49.—In contact with hard-pad case five weeks previously. Middle stage of the disease with also an obvious bronchopneumonia. Amphotropin therapy commenced, plus a course of penicillin aimed at overcoming the pneumonic syndrome. Gradual improvement ensued until 15.1.50, when the animal was reported to be having fits. Soneryl was prescribed and the convulsions subsided, but leaving the bitch with a slight locomotor ataxia. This, however, responded to arsenical tonics and the animal was apparently normal on 28.3.50.

Case 10.—18-month mongrel Terrier dog

24.12.49. Early middle stage, but had one convulsion. Amphotropin administration met with complete success, the animal being apparently normal by 8.1.50.

Case 11.—Four-year Dachshund bitch.

27.12.49. Late middle stage, pads very hard. Two injections of amphotropin were administered and then owing to a misunderstanding the animal was not seen again until 19.1.50. The bitch was then apparently normal, the pads having sloughed about ten days after the last injection.

Case 12.—Three-month mongrel Terrier bitch.

27.12.49. Case originally diagnosed as distemper and symptomatic treatment prescribed with gradual deterioration in condition until 25.1.50, when the animal presented symptoms of typical hard-pad. Amphotropin therapy commenced with apparent progressive improvement until 9.2.50, when the bitch was clinically normal, except for a slight ataxia. On 16.2.50, however, she developed continuous convulsions and died.

Case 13.—Four-year mongrel Terrier dog.

28.12.49. Late stage with chorea, complete anorexia and extreme depression. Three successive injections of amphotropin were made with very little improvement in the animal's condition, and the dog died of shock during the administration of the fourth injection.

Case 14.—12-month Clumber Spaniel dog.

4.1.50. Early stage with malaise, cough and shivering attacks, T.104°. Amphotropin therapy carried out with apparently good success, but a relapse occurred on 11.2.50, and the animal was destroyed at the owner's request as it was becoming "snappy."

Case 15.—Three-year wire-haired Fox Terrier dog.

9.1.50. Late middle stage and animal partially blind. Amphotropin injections were successful in restoring the animal's general condition, but the partial blindness remained.

Case 16.—Five-month Dachshund dog.

15.1.50. Early stage. Amphotropin treatment met with apparent success and the animal appeared to have made a complete recovery, but relapsed on 13.2.50. A further course of amphotropin injections was embarked upon, but after the first one the animal developed epileptiform convulsions and was destroyed.

Case 17.—Five-month Alsatian bitch.

15.1.50. Early stage. Again in this case the animal made an apparent recovery after amphotropin therapy, but on 9.2.50 convulsions occurred and the animal was destroyed.

Case 18.—Two-year Springer Spaniel bitch.

16.1.50. Late stage with slight chorea of masseters. Ampho-

tropin therapy completely successful and by 3.2.50 animal was normal except for a slight deafness.

Case 19.—18-month mongrel Terrier dog.

19.1.50. Early middle stage. Uneventful recovery under amphotropin.

Case 20.—Nine-month Alsatian dog.

19.1.50. Late stage. Amphotropin injections produced only a slight improvement in the animal's condition and on 9.2.50 paraplegia developed and the animal was destroyed.

Case 21.—Nine-month Cairn Terrier bitch.

21.1.50. Early stage. Recovery uneventful and complete.

Case 22.—14-month Labrador dog.

22.1.50. Early middle stage, amphotropin therapy bringing complete recovery.

Case 23.—18-month Golden Retriever dog.

23.1.50. Early middle stage. Recovery uneventful.

Case 24.—Two-year Chow bitch.

24.1.50. Early stage. Amphotropin therapy unsuccessful and the onset of convulsions and paraplegia led to the animal's destruction.

Case 25.—18-month Cocker Spaniel bitch.

30.1.50.—Late stage with convulsions. After one injection of amphotropin continuous convulsions supervened and the animal was destroyed.

Case 26.—Eleven-month wire-haired Fox Terrier bitch.

4.2.50. Middle stage. Recovery uneventful.

Case 27.—Eight-month Alsatian bitch.

4.2.50. Late stage with hyperaesthesia of all the body surface. Amphrotropin therapy successful.

Case 28. Four-year Chow bitch.

1.2.50. Early stage. Recovery uneventful.

Case 29.—Six-month Cocker Spaniel dog.

7.2.50. Late stage with hysteria attacks. After one injection of amphotropin the animal developed severe convulsions and was destroyed.

Case 30.—17-month Labrador dog.

3.4.50. Middle stage. Recovery uneventful.

Case 31.—13-month Labrador dog.

25.3.50. Early stage. Recovery uneventful.

Case 32.—Eleven-month mongrel Terrier bitch.

18.2.50. Late middle stage. Recovery uneventful.

Case 33.—Two-year Alsatian bitch.

27.2.50. Early stage. Recovery uneventful.

Case 34.—Two-year Cocker Spaniel dog.

1.3.50. Early middle stage. Recovery uneventful.

Case 35.—Three-year wire-haired Fox Terrier.

11.3.50. Late stage. Recovery uneventful.

From these case records it would appear that in animals over 12 months old, amphotropin therapy is highly successful in cases not showing signs of severe involvement of the nervous system and that a confident prognosis may be given in such cases. Animals under 12 months old affected with hard-pad disease usually show quite a good response to amphotropin therapy, but often relapse, unfortunately, with signs of severe nervous derangement.

It would also seem that the virulence of the virus varies considerably under field conditions. It was found, for example, that during the course of this therapeutic trial cases on a new housing estate in this city did not respond to amphotropin treatment as did clinically identical cases elsewhere in the city, and usually succumbed to the encephalitic syndrome of the disease. Local environmental conditions should, therefore, be taken into consideration when assessing the prognosis in individual cases.

It must be mentioned that in several of the cases Hewlett's Co-cerevisae tablets were prescribed as an adjunct to the amphotropin therapy. In some cases where there was present a severe conjunctivitis penicillin eye ointment was employed.

Summary

(1) Some observations on the effects of the administration of amphotropin in dogs are noted.

(2) Thirty-five consecutive cases of hard-pad disease are classified in accordance with Singleton and Potter's[2] grouping and the effects of amphotropin therapy on the course of the disease are noted.

(3) From the results of this therapeutic trial it is concluded that in assessing the prognosis of amphotropin treatment in hard-pad cases, the chief factors to be borne in mind are:—

(*a*) Age. Animals over 12 months of age show a significantly better recovery rate than animals under that age.

(*b*) The presence or absence of severe nervous involvement. Animals showing signs of such involvement seldom recover.

(*c*) Local environmental conditions. These may affect the virulence of the virus and thus the resistance of the disease to treatment.

References.

[1] Greatorex, J. C. (1949.) *Vet. Rec.* **61.** 402.

[2] Singleton, W. B. & Potter, R. (1949.) *Ibid.* **61.** 826.

[3] Uvarov, O. (1949.) *Ibid.*, **61.** 363.

REVIEWS

[Die Untersuchung von Tieren stammender Lebensmittel. (A Study of Food Materials of Animal Origin.) By Dr. Schonberg. Published by W. & H. Schaper, Hannover. Price unstated.]

This is a comprehensive and useful little text book, providing information which will be of value not only to the practitioner in the field but also to the laboratory worker investigating problems relating to the transmission of disease to humans *via* food materials of animal origin. The origin of bacterial and fungal infections and the influence of different methods of preservation on such articles as meat, fish, sausages, eggs and poultry are all dealt with. The book is excellently illustrated and includes a number of photomicrographs of organisms, fungi, parasites and tissues, which make it more readily understandable for those who do not read German fluently.

It can be recommended to all whose work impinges on the public health aspect of food production.

* * * * *

[Some Important Animal Diseases in Europe. (Papers presented at the Animal Diseases Meeting, Warsaw, 1948.)]

This publication is issued by the Food and Agriculture Organisation of the United Nations and includes papers by a number of world authorities, this country being represented by T. Dalling and A. W. Stableforth. The diseases covered are as follows: Swine Erysipelas, Teschen Disease of Pigs, Swine Fever, Bovine Tuberculosis, Brucellosis, Bovine Mastitis, Newcastle Disease and Dourine.

The main article in each section is written in English but there is an extensive résumé in French and a brief discussion in each case.

SWINE FEVER INCREASE

Our readers will have noted from the useful little weekly feature, "Addresses of disease-infected premises," that the Ministry of Agriculture's animal health division report a considerable increase of swine fever in Great Britain this year. By July 27th 43 cases had been confirmed, 30 in England and 13 in Scotland. This was 38 cases more than in the whole of last year, and 11 more than in 1948. The areas in which the disease is most prevalent are Surrey, Somerset, Dorset, Northants and parts of Scotland.

ANNOTATION

BRACKEN POISONING, ITS CAUSE AND CONTROL

The vexed question of the cause of bracken poisoning seems at last to be in a fair way of solution. It is clear that the mechanism could not be understood until much knowledge had been gained upon the separate identity and precise chemical constitution of certain essential food factors. Thereupon, again, an understanding had to come of the effect of other factors which are present sometimes in some substances ingested along with the food and which may render inactive one or more of the essential factors contained in it.

The importance of the subject in the livestock economy of this country had engaged the personal attention of the then Chief Veterinary Officer of the Ministry (then the Board) of Agriculture, the late Sir Stewart Stockman, about 35 years ago and in 1917 he published a paper which showed clearly that artificial feeding of cattle with bracken could set up symptoms of bracken poisoning. The real cause, however, remained a mystery, for the "poison" did not conform in its properties to those of the poisonous plants until then discovered to contain "active principles" in the shape of readily isolated alkaloids, glucosides, or simple poisons such as hydrocyanic acid, the properties of which could be determined definitely by means of more or less simple chemical tests.

It was only in 1946 that a possible clue to the true nature of bracken poisoning was forthcoming when the American workers, Weswig, Freed and Haag published a short letter (*J. Biol. Chem.* (1946.) **165.** 737) on the effect of feeding laboratory-bred rats on a diet which included bracken and thereupon noted the production of a disease which closely resembled vitamin B_1 (thiamine, aneurin) deficiency, the "poisoned" animals afterwards responding promptly, with complete recovery, to vitamin B_1 therapy.

This scent was hotly followed up by the workers at the Department of Animal Health and the Biochemical Laboratories of the Department of Agriculture at the University College of Wales, Aberystwyth, and to their credit they have not been slow in reporting their results in the veterinary literature (*Brit. Vet. J.* (1949.) **105.** 175; *Vet. Rec.* (1949.) **61.** 549).

The problem of bracken poisoning in cattle and of bracken control, it may be said, is a serious one in Wales, for of the 1,710,000 acres of rough grazing available, some 152,000 acres are densely covered with bracken. Nor are cattle the only farm animals susceptible, for "bracken staggers" in horses is well known in hill farming communities. Only one reference to any harmful effect in sheep, however, has been traced. The various B vitamins, it is now well known, are not dietary essentials for ruminants, for they can be produced through the symbiotic action of micro-organisms in the rumen. In horses and other monogastric herbivora, conditions are less favourable for microbic synthesis. The withered green plant, *Pteris acquilina*, and the rhizomes had been proved by various workers, when the Aberystwyth work began, to cause disease, which may be fatal to cattle and horses, and again the "toxic principle" was known to be cumulative in effect, requiring a certain time to establish its full action, after which severe illness could be seen to begin explosively.

Samples of bracken were fed by the Aberystwyth workers to groups of rats in the laboratory, these samples having been collected either in July while the plant was in full growth but still green, or in October after the plant had become brown and withered. The leaves, in both cases, were selected, then dried in a current of air at 80° to 100° C. and milled to a fine powder. These bracken powders were incorporated in a food mixture in the proportion of 40 per cent., with a basal diet upon which alone newly-weaned rats gained weight steadily. The rats in the group fed with the mixture containing bracken collected while green and then dried, however, started losing weight after a few days and within a month were emaciated and showed symptoms characteristic of Vitamin B_1 deficiency. Now, some rats in this particular group which were carefully observed and which, a few days before anticipated death, were injected subcutaneously with a saline solution of pure vitamin B_1 (0·1 mg. aneurin) showed in every case dramatic improvement. On the other hand, the rats in the second group, that is the group which were fed with the mixture containing the dried withered and brown bracken, thrived well. The bracken would therefore be toxic to rats only in the stages of active growth. Similarly, no toxic effect was observed in a horse fed on a ration containing nearly 50 per cent. of the second sample of bracken, namely, that which had failed to set up toxic symptoms in the rats. That the toxic symptoms were caused by a vitamin B_1 deficiency was further confirmed by an assay of the vitamin B_1 and pyruvic acid level in the blood.

Similar investigations were undertaken on a small herd of cattle recovering from bracken poisoning, the treatment consisting simply of a change of diet. All these animals had been pastured since May, 1948, on rough hill land containing areas abundantly covered with bracken. Typical symptoms developed during August followed by the rapid death of six cattle. Eight eventually recovered. All these recovered animals appeared dull and two of them had shown a high temperature, up to 107° F. Whereas the normal vitamin B_1 levels in the blood of healthy cattle range from 8 to 12μ per 100 ml., they ranged from 3·8 to 6·5μ in these recovered cattle, being lowest in those which had shown most marked hyperthermia.

It had already been noted by the American workers, Green, Carlson and Evans in 1941 that a disease in foxes which resembles the so-called Chastek paralysis in man and was caused by feeding the foxes on raw carp, could be prevented or cured by administering vitamin B_1 (aneurin). Much light upon the cause of the intoxication was soon shed by the work of the Americans, Krampnitz and Woolley, in 1944, who showed that an enzyme ("thiaminase") occurred in several aquatic animals which inactivated vitamin B_1 by splitting the molecule into its pyrimidine and thiazole components. These two dissociated components possess no vitamin activity for mammals. Certain microorganisms (such as *Phycomyces blakesleeanus*) can resynthesise the complete vitamin from these dissociated components.

More recently, workers in India (Bhagvat and Devi, 1944) have reported that several Indian plant products, such as ragi (*Eleusine coracana*), rice polishings, baja (*Pennisetum typhoideum*), green gram (*Phaseolus radiatus*), mustard seed, cotton seed, and linseed, all contain a factor which rapidly inactivates vitamin B_1 *in vitro*. The mode of inactivation of the vitamin by the plant extracts has remained unknown.

The Aberystwyth workers discovered that the sample of bracken which had produced symptoms of poisoning in their experimental rats contained a factor which was extractable with water and which also inactivated vitamin B_1 chemically *in vitro*. The non-poisonous sample as well as perennial rye grass did not possess this property. Incubations of vitamin B_1 with certain auto-oxidisable substances, however, of plant origin, like ascorbic acid, gallic acid, and protocatechnic acid, caused considerable loss of the vitamin, whereas neither a tea-tannin preparation nor tannic acid from oak galls had any destructive effect. However, a tannic acid prepared from

the sample of bracken found toxic for rats showed considerable destructive ability.

The most recently published work of the Aberystwyth group (*Biochem. J.* (1950.) **46.** *Proc.* xxxviii) indicates that the " anti-aneurin " factor of bracken is very stable in the intact leaf after air-drying at room temperature and withstands heating at 100° C. for a considerable time in this condition. Steaming or autoclaving results in rapid inactivation. Deproteinized water extracts and alcohol (ethanol) concentrates contain no demonstrable anti-aneurin activity. The anti-aneurin factor can be extracted from the leaf by chloroform water (adjusted to *p*H 7·8 to 8·0) and in this solution it is thermolabile and behaves like an enzyme. From appropriate tests, it seems highly probable that cleavage of the vitamin B_1 molecule occurs at the so-called methylene bridge of the molecule by the action of the enzyme. Chromatography has further confirmed the presence of the thiazole component as one of the products of the reaction. A low temperature concentrate of the bracken enzyme when added to a standard basal diet adequate for the growth of rats had the same effect on the animals as the original bracken leaf powder diet, whilst a parallel experiment with a boiled concentrate added to the diet was quite innocuous and allowed normal growth. The existence of a plant thiaminase does not seem to have been reported previously.

Furthermore, according to these workers in their last report, bracken is not the only plant which possesses this enzyme, and they have already demonstrated its presence in horse-tail (*Equisetum arvense*).

In a letter which these workers published last year in *The Veterinary Record* ((1949.) **61.** 549) they reported in detail on the clinical syndrome observed in a case of " bracken staggers " in the horse and its effective cure by vitamin B_1 (aneurin) therapy. Evidence is accumulating, they state in their last communication, that when clinical symptoms are evident also in bovine bracken poisoning there is likewise a state of B_1 deficiency, although the condition in the ruminant appears to be complicated by other factors.

In this connection, a short article in the last issue (June, 1950) of the *Quarterly Review of The Royal Society of Agriculture of England*, entitled " How We Improved our Farm," by Margaret D. Withers, can be commended strongly to the notice of your readers. It is shown in this article, how in conditions of labour shortage on a little hill farm heavily infested with bracken, the land could be rapidly cleared, completely and economically, by distributing their ordinary foodstuffs just within the borders of the infested patches for the feeding of folded hens in the case of the more even patches, and for pigs where the land was not only steep but also so uneven and rocky that fold units could not be used. These species of animals promptly caused such havoc by uprooting and eating the bracken when they were fed in it in this way that it usually disappeared completely in a single season. Hence, by this means the laborious and costly method of scythe cutting as customarily practised could be dispensed with entirely.

J. T. E.

Cattle dealers and others visiting Great Britain and the continent have been warned by the Eire Department of Agriculture to avoid areas which may be infected with foot-and-mouth or other livestock diseases. Persons who have been in contact with farm stock in Britain are asked to report to the Department's officers on their return to Eire.

JULY QUARTERLY MEETING OF COUNCIL, N.V.M.A.

SUMMARY OF PROCEEDINGS

Certain items of the business conducted by Council, N.V.M.A., at its meeting held in London on July 14th, 1950, with the President, Mr. J. W. Bruford, in the chair, heralded in a pleasantly anticipatory fashion the forthcoming Congress and Annual General Meeting at Cardiff in September.

NOMINATION OF OFFICERS FOR 1950-51

Outstanding amongst these features was the unanimous nomination of the following as the officers of the Association for the coming year:—

President.—Mr. S. F. J. Hodgman, M.R.C.V.S.

Senior Vice-President.—Mr. J. W. Bruford, M.R.C.V.S.

Junior Vice-President and President-Elect.—Mr. A. J. Wright, M.R.C.V.S.

Hon. Treasurer.—Mr. H. E. Bywater, M.R.C.V.S.

Hon. Secretary.—Mr. H. F. Hebeler, M.R.C.V.S.

(Mr. Gould, the existing Hon. Secretary, being due to retire under a rule laid down by Council.)

General Secretary.—Mr. F. Knight.

Not only the North will acclaim the nomination of Mr. A. J. Wright, of Macclesfield, Cheshire, for the ultimate honour of the Presidency, while all equally will be glad that another practitioner, in Mr. Hebeler, who has spent all his professional life in practice at Langport, Somerset, has indicated his readiness to follow Mr. Gould in the service of the Association as Hon. Secretary. Council clearly was delighted that the completion by Mr Knight in September of the 25th year of his able and devoted work as Secretary would afford the Association the opportunity of making some tangible recognition of its appreciation; it also welcomed the intimation that Mr. Niel Matheson, the new Liaison Secretary, would take up his duties very shortly.

The recommendation of the Selection Committee that the recipient of the award of the Dalrymple-Champneys Cup and Medal for 1950 be Mr. E. Brayley Reynolds was heartily acclaimed. This " recognition of his contributions to the development of the thoroughbred livestock industry and his eminence as a surgeon " will evoke in the minds of old London students memories of the prowess of the Professor who appeared in the interlude between the Macqueen and Hobday eras, and who carried their affection with him to his Newmarket practice.

From the report of the General Purposes and Finance Committee it was learned also that the proposed new system of payment of expenses of representatives of Divisions serving on the Council and Committees of the Association having commended itself to the Divisions as a whole, the scheme will be implemented from the date of the Annual General Meeting, 1950.

Earlier in the meeting Council had before it the report of a sub-committee appointed by the Parliamentary and Public Relations Committee to consider a subject, the disposal of animal carcases, with special reference to the condition of knacker yards in this country, which was raised in the correspondence columns of this journal. The report, which was accepted, confirmed the truth of certain of the allegations made. It will be published in the open columns of *The Veterinary Record*, and the attention of the Ministry of Agriculture is to be drawn to the report and its conclusions; also to the fact that the contentions of the Committee are borne out in the appendices to the Rosebery Committee Report. An offer to discuss this matter is to be made to the Ministry.

After prolonged debate on the circulated report on an exploratory discussion between representatives of the Association and the Animal Health Trust held on November 2nd, 1949, together with a report of the Organising Committee, both on the proposed hospital scheme of the Trust, Council accepted, in the following slightly amended form, the points specified at the conclusion of the agreed report upon which there appeared to be unanimity of opinion:—

(1) That, while a nation-wide hospital service may be desirable as a long-term policy it is not desirable that it should be worked on a county basis at the moment. The long-term policy should be carefully considered.

(2) That, when the Animal Health Trust had the necessary funds to establish a hospital service, a pilot hospital should be established in a district where the local practitioners had agreed to co-operate with the Animal Health Trust.

(3) That the Trust should inform the N.V.M.A. of their wish to select a suitable site for a hospital and request the Association to publicise this to the profession. It is felt that such a course will ensure the fullest co-operation with the practitioners in the area finally selected.

(4) That the result of their experience in running one or two such hospitals would be invaluable in guiding further policy of the Animal Health Trust and the N.V.M.A. in relation to the formation of a generalised hospital service.

On this basis Council instructed its representatives to continue discussion of this matter with the Animal Health Trust.

Veterinary State Medicine

The receipt of a report of unprecedented length and importance from the committee concerned with Veterinary State Medicine afforded striking evidence of the prominence which now attaches to this aspect of veterinary work.

In connection with the arrangements for implementing the Food and Drugs (Milk and Dairies) Act, 1944, it was reported that the nominations received from Divisions relating to the appointment of one veterinary surgeon to serve on each County Milk and Dairies Advisory Committee had now been sent forward to the Ministry of Agriculture, and that the Ministry had promised to notify the Association of the appointments made by the Minister from these nominations.

Scheme for the Control of Certain Diseases of Dairy Cattle.—When agreement was reached between the N.F.U. and the Ministry of Agriculture that, as from October 1st, 1950, no new contracts under the scheme would be recognised, the Association for its part, nevertheless stressed the view unanimously arrived at at the special meeting held in November, 1949, that the control scheme as originally conceived should not be discouraged in those areas where it had maintained favour, and its progress carefully studied in the general interest. Inasmuch, however, as the Ministry does not consider that it would be justified in continuing the scheme merely to encourage the continuation of contracts, the majority of which (as the present trend shows) would be outside the scheme, it proposes to bring the scheme to an end on October 1st, 1950, though it will honour its obligations under all contracts then existing until their expiration. Council felt that, under the circumstances, no option remained to it but to accept this decision.

Artificial Insemination.—Council endorsed the view of the Committee (on a report from its A.I. Sub-Committee) that, as fully agreed by the Head of the Milk Production Division of the Milk Marketing Board, the proposed meeting in the autumn of veterinary officers of Centres, veterinary representatives of Advisory Committees and other veterinary surgeons interested in A.I., would serve a most useful purpose if it succeeded in promoting close co-operation between A.I. Centres and practising veterinary surgeons in dealing with problems of infertility.

Tuberculosis Eradication.—The Committee is seeking discussion with the Ministry of Agriculture on the provision in the Revised Tuberculosis (Attested Herds) Scheme (to replace the present scheme on October 1st, 1950) of measures which will assist individual herd owners to become attested. Discussions also are foreshadowed on a Ministry memorandum on the plan for the eradication of tuberculosis on an area basis.

FOWL PEST IN ABERDEENSHIRE

The *Aberdeen Press* reports that the presence of fowl pest has been confirmed in Aberdeenshire, a flock of about 600 pure-bred poultry belonging to a smallholder in the Auchnagatt district of Buchan having been slaughtered on July 22nd by officers of the Ministry of Agriculture animal health division.

This is the first occurrence of fowl pest this year in the North-East and on the whole mainland of Scotland. Since last year's serious outbreak, which chiefly affected Orkney but also caused losses in Aberdeenshire, there have been recurrent cases in the Hebrides up till a few weeks ago. Aberdeenshire is Scotland's biggest and most important poultry-rearing county.

QUESTIONS IN PARLIAMENT

Fowl Pest

Mr. G. Ward (July 25th) asked the Minister of Agriculture in which countries fowl pest is known to exist; from which of these countries poultry carcases are imported; what proportion of the total supplies available in this country come from these countries; and what steps he is taking to prevent the spread of fowl pest in the United Kingdom.

Mr. T. Williams: Outbreaks of fowl pest have been reported from most countries in Europe as well as many parts of Africa, Asia and North America. Some European countries, however, are normally free from the disease, and when sporadic outbreaks occur they are quickly stamped out by the authorities. Imports from such countries are unlikely to cause outbreaks of fowl pest in this country. The only countries where fowl pest is widespread from which poultry may now be imported are Belgium, France, Hungary and Poland, and imports from these countries in 1949 accounted for about 6½ per cent. of the total supplies in the United Kingdom. As to the last part of the question, I would refer the hon. Member to the reply I gave to the hon. Members for Newbury (Mr. Hurd) and Guildford (Mr. Nugent) on July 13th. [*Vet. Rec.* **62.** 426.]

Mr. De la Bere (July 27th) asked the Minister of Agriculture whether, in view of the increasing spread of fowl pest throughout the country, he will further extend the operations of the Poultry Carcases Order, 1950, with a view to preventing the spread of the disease in areas which up to now have not been infected.

Mr. G. Brown: The Poultry Carcases (Importation) Order already restricts the distribution of imported carcases from certain countries to five relatively small areas in England and Wales. Recent outbreaks of fowl pest outside these areas probably have their origin in poultry imported and distributed before the Order came into operation.

Sir I. Fraser asked the Minister of Agriculture if he will consider a long-term plan to provide feeding-stuffs for the production of sufficient home-grown poultry to permit severe restriction of imports of poultry from countries where fowl pest is endemic; and, meantime, if he will institute a propaganda campaign to inform the public and farmers how to avoid or mitigate fowl pest.

Mr. T. Williams: It has always been the Government's policy to increase as far as practicable our supplies of animal feeding-stuffs, but I am afraid there is nothing I can yet add to the reply which I gave the hon. Member for Guildford (Mr. Nugent) on March 23rd about rations for poultry keepers. As regards the second part of the Question, extensive publicity has been maintained over the past three years by means of Press announcements, broadcasts, distribution of leaflets to poultry keepers, talks at poultry shows, and so on, and I shall continue to take every opportunity of reminding poultry keepers of the precautions against fowl pest.

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Private Slaughterhouses

Mr. Thornton-Kemsley (July 24th) asked the Minister of Food what arrangements he proposes for the reopening of suitable private slaughterhouses to facilitate the handling and conditioning of the anticipated extra cattle and sheep during the peak kill.

Mr. Webb: This problem will be considered by the seven area advisory committees which have been set up to advise about these autumn arrangements. These committees represent the meat trade, the farmers' unions and the slaughtering industry. I am confident they will provide adequate plans.

Mr. Thornton-Kemsley: Does the Minister expect to receive proposals from these bodies very shortly?

Mr. Webb: Yes, Sir.

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Human Tuberculosis (Scotland)

Mrs. Jean Mann (July 25th) asked the Secretary of State for Scotland what consideration he has given to the Report of the Scottish Committee on Tuberculosis Service in Scotland; and if he will make a statement on the recommendation of crisis expansion of tuberculosis service.

Miss Herbison: With his officers my right hon. Friend has been studying carefully this Report, but has found in it no recommendation for the expansion of facilities which has not already been considered, whilst most of the recommendations have been tried with varying degrees of success. In the last two years more than 300 additional beds have been brought into use for respiratory tuberculosis, many of them in infectious diseases and general hospitals. This process my right hon. Friend proposes to continue, especially in general hospitals where nursing staffs are strongest.

Mrs. Mann: But would my hon. Friend inform the Secretary of State that all the recommendations published in the *British Medical Journal* have not been tried, and notably these two recommendations—one, that beds in infectious diseases hospitals should be used, and second—which, I think, is practicable—that the patients should have treatment in their own homes? Will she ask him to give attention to those two points?

Miss Herbison: The information which my hon. Friend has is quite wrong. In my answer I pointed out that already we have 300 beds, most of them coming from infectious diseases hospitals. As to domiciliary treatment we have taken certain steps in that direction in the auxiliary services.

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Flour (Extraction Rate)

Wing Commander Bullus (July 24th) asked the Minister of Food when he contemplates a reduction in the extraction rate of flour from wheat in order to provide a whiter loaf.

Dr. Barnett Stross asked the Minister of Food whether he now has any statement to make on the flour extraction rate.

Mr. Webb: We have decided to reduce to 80 per cent. the extraction rate of flour used for the national loaf. This will be made up of home-milled national flour with a rate of 81 per cent., and a proportion of imported flour with a rate of 81 per cent., and a proportion of imported flour with a lower rate. This change, which will take effect on Sunday, August 27th, will enable the public to get a whiter and more generally acceptable loaf, while still meeting the standards recommended by the Post-War Loaf Conference. It will also add to the quality and quantity of our supplies of animal feeding-stuffs.

Wing Commander Bullus: Does the Minister hold out any immediate prospect of a return to the 1939 standard, which was a little better than that announced now?

Mr. Webb: Let us take one step at a time.

Dr. Stross: Is my right hon. Friend aware that the 85 per cent. extraction rate, together with the high consumption of liquid milk, was responsible in the main for the continuously improving conditions in the health of the nation, and will he tell the House now that he does not contemplate any further degradation of that standard?

Mr. Webb: This is our decision, and on it we stand. We have decided that it was possible to reduce the extraction rate at this point because of the high nutritional value of the extra amounts of other kinds of food which we are now able to supply.

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Income Tax (Farm Animals)

Mr. Baldwin (July 25th) asked the Chancellor of the Exchequer whether he is aware that inspectors of taxes are refusing to admit immature animals under the herd basis; and whether he will instruct them to admit them under paragraph 7 (2) (*b*) of the Tenth Schedule of the Finance Act, 1947.

The Chancellor of the Exchequer (Sir Stafford Cripps): Where an election is made for the herd basis for taxation purposes, the law requires immature animals to be excluded from the herd, except where certain special conditions set out in paragraph 7 of the Tenth Schedule to the Finance Act, 1947, are satisfied. In case of dispute on this point there is a right of appeal to the appropriate body of appellate Commissioners.

Mr. Baldwin: Can the right hon. Gentleman, with his knowledge of livestock breeding, explain how it would be possible for these people to bring their immature animals into a herd, and why should they not be allowed to bring into the herd the animals which they have bred?

Sir S. Cripps: If the hon. Gentleman will study paragraph 7 of the Tenth Schedule to the Finance Act, 1947, he will see the conditions under which they are allowed to do so, but these are very limited conditions.

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Cattle Diseases (Research) (Africa)

Sir R. Acland (July 26th) asked the Secretary of State for the Colonies how much public money has been spent in any recent period for which figures are available; and how many men are working, on experiments undertaken or supported by the Government and aimed at discovering means of overcoming the diseases which attack cattle in Africa.

Mr. J. Griffiths: £146,865 were issued from Colonial Development and Welfare Research Funds during 1949-50 for veterinary projects to assist in overcoming the African cattle diseases. There are 42 posts of Veterinary Research Officers in Africa, with numerous subordinate staff, and laboratory accommodation. In addition there is considerable expenditure on Veterinary Departments, much of whose work is directly or indirectly devoted to these purposes.

Cattle Slaughter (Humane Methods) (Colonial Areas)

Mr. Sorensen (July 26th) asked the Secretary of State for the Colonies to what extent humane methods of slaughtering cattle are being employed in the Colonial areas; and what consideration has been given to promoting such more humane methods as are being or have been adopted in this country.

Mr. J. Griffiths: This is a matter to which Colonial Governments have devoted much attention. Several territories have made experiments with a view to adopting improved methods and I recently inquired to what extent they were proving successful. In the light of the experience gained I shall consider addressing Colonial Governments generally on the matter.

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Condemned Meat, Islington

Mr. Boyd-Carpenter (July 26th) asked the Minister of Food whether he has yet received the report of the inquiry set up by him into the circumstances in which a large quantity of meat slaughtered at Islington on or about June 3rd, 1950, went bad; whether he intends to publish this report; and what action he proposes to take against those directly responsible.

The Minister of Food (Mr. Maurice Webb): As I told the hon. and gallant Member for Angus, North and Mearns (Mr. Thornton-Kemsley) on July 19th, I have received this report. I do not think any useful purpose would be served in publishing it, and I am satisfied that no disciplinary action is necessary.

Mr. Boyd-Carpenter: The right hon. Gentleman will recall that in the answer to which he has referred me he stated that this loss arose from circumstances which could not be foreseen. Can he say why the people who killed this meat on a Saturday, for which there was no refrigerating space, and then left it over the week-end, failed to foresee that it might go bad?

Mr. Webb: I have looked into this very carefully and have seen a detailed report. The truth is that the manager in this case took a risk. On balance, I think he took a justifiable risk, the sort of risk he has to take in these circumstances. I am not prepared to discipline a man for taking a risk and showing some sort of enterprise.

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Pigs (Transport)

Lieut.-Colonel Sir Thomas Moore (July 26th) asked the Minister of Food how many pigs were collected in Sussex during the past six months and conveyed in lorries to Wiltshire for slaughter; what percentage were injured by fighting or otherwise in transit; and whether any arrangements are made for ensuring that they shall be transported under satisfactory conditions.

Mr. Webb: Nearly 20,000 during the six months ended June 30th, 1950. Detailed records are not kept of the number of these pigs that might have been injured in transit but five were found dead on arrival. I am assured that satisfactory arrangements are made for transporting them; and, of course, the hauliers concerned have to observe the provisions of the Transit of Animals Order, 1927.

Sir T. Moore: As it is obvious from the right hon. Gentleman's reply that there is quite unnecessary and unjustifiable suffering involved in this method of transport, cannot his advisers suggest something better?

Mr. Webb: I am not really responsible for the actual movement of the pigs. I should not have thought that five out of 20,000 is grave evidence of serious suffering, but, in so far as we can mitigate suffering, I shall be only too willing to co-operate as far as I can.

Earl Winterton: As the matter affects the interests of my constituency, will the right hon. Gentleman make quite clear that this is a perfectly legal transit, in the hands of private enterprise, and that it is for the police to prosecute in cases of cruelty?

Mr. Webb: That is so. As I said, they are expected to observe the provisions of the existing Order.

Sir Ralph Glyn: Will the right hon. Gentleman consider giving licences to slaughterhouses in the Home Counties so as to avoid the unnecessary transit of pigs?

Mr. Eccles: Is the right hon. Gentleman aware that the factory in my constituency which deals with these pigs receives 5,000 pigs a week, and that they are treated there with the greatest consideration?

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Horses (Export)

Mr. G. Jeger (July 27th) asked the Minister of Agriculture (1) what was the declared value of the 25 live horses recently shipped from Goole to Antwerp for slaughter; and what action was taken to check the declaration;

(2) what steps are taken to verify the declared value of horses exported for slaughter; and whether he has any information as to the effective working of the Order regulating this.

Mr. T. Williams: The provisions of the Diseases of Animals Acts do not call for any verification of the declared values of horses for export, but prohibit the exportation of certain kinds of horses unless the veterinary inspector who examines them certifies that in his opinion they are not of less than certain prescribed values. The revised values under the Exportation of Horses (Minimum Values) Order, 1950, have not been in force sufficiently long for me to judge of their effectiveness in preventing the export of horses for slaughter.

The value declared by the exporter of each of the 25 horses recently shipped from Goole was £80. They were examined by the veterinary inspector at Goole, who was satisfied that they were each worth at least £80, which is also the minimum value for a heavy horse prescribed by the recent Order below which exportation is prohibited.

NOTES AND NEWS

Diary of Events

Aug. 9th.—Meeting of Editorial Executive, N.V.M.A., 2.30 p.m.

Sept. 3rd-8th.—Sixty-eighth Annual Meeting and Congress of the National Veterinary Medical Association, at Cardiff.

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N.V.M.A. Congress at Cardiff

Application for Tickets

With our last issue we included the ticket application form and particulars of the arrangements for social and other events at Cardiff.

Members are requested to apply early and not later than Monday, August 21st.

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Rations for Sick Horses detained in Veterinary Establishments

Following upon representations made by the N.V.M.A. in the above matter, the Ministry of Food (Animal Feeding Stuffs Division) and the Ministry of Agriculture, in consultation, inform us that both Departments agree in principle with the Association's suggestion that veterinary surgeons may now be allowed a certain amount of oats and bran for feeding sick horses kept on their premises for operation or treatment.

In order that details of the scheme for such provision may be worked out, however, the Association has been asked to furnish the Ministry of Agriculture with the names and addresses of veterinary surgeons likely to be concerned. In the first instance, therefore, such members are requested to send this information as soon as possible to the General Secretary at 36, Gordon Square, London, W.C.1.

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PERSONAL

Births.—Grey.—At Northallerton on July 8th, to Lilian, wife of J. R. Grey, M.R.C.V.S., a daughter.

Hopkins.—On July 25th, 1950, to Muriel (*née* Wilson), wife of C. D. Hopkins, M.R.C.V.S., Danbury, Essex, a son—Roger David.

Willder.—On July 25th, 1950, at Edinburgh, to Mary, wife of Gordon Willder, M.R.C.V.S., a son.

Willis.—On July 19th, 1950, to Pamela and George Willis, a son—Martin Henry.

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Marriage.—MacLellan—Durno.—On July 26th, 1950, at St. Devenick's Church, Bieldside, by the Rev. Canon E. F. Easson, B.SC., M.A., assisted by the Rev. B. D. Beeley, Malcolm MacLellan, M.R.C.V.S., son of Mr. and Mrs. L. MacLellan, Tigh Arry, North Uist, to Mary Catherine (Mayrine), daughter of the late A. E. Durno and of Mrs. Durno, Priory Hill, Peterculter, Aberdeenshire.

Conferment of Degree.—At a congregation for the conferment of degrees held by the University of London on July 21st, the degree of Ph.D. in the Faculty of Science was conferred upon Mr. F. W. Withers, M.A. (Oxon), M.R.C.V.S. The thesis was entitled "Mortality rates and disease incidence in calves in relation to feeding, management and other environmental factors." The work was carried out during the years 1946 to 1949 for the Agricultural Research Council.

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SERIOUS ANTHRAX OUTBREAK

On Monday last anthrax was confirmed at Holme Pastures, Sutton-on-Trent, Nottinghamshire, where ten cattle have died. A Ministry of Agriculture official described the outbreak as the most serious in the county for many years. There are about 150 cattle, belonging to 30 owners, on the pastures.

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R.A.V.C. PLAQUE ON DONCASTER RACE STAND

There is now a plaque from the Royal Army Veterinary Corps on Doncaster Race Stand—to commemorate the use of the Stand, during the last war, by a section of the Corps, as headquarters. Brigadier J. J. Plunkett, Director of the Army Veterinary and Remount Services, has also thanked the people of Doncaster for kindnesses shown to members of the Corps.—*Yorkshire Post.*

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LEGAL NOTES

Underfed Animals Allegation at Hereford.—At Wigmore Magistrates' Court (states the *Hereford Times* in its issue of July 14th), the R.S.P.C.A. charged two women joint-owners of a farm at Shobdon with causing unnecessary suffering to 12 ponies and a cow by not feeding them sufficiently, and by failing to give them proper care and attention between April 6th to 20th.

The case against one of the defendants, Miss Lucy Beryl Chapman, of Bellgate Shobdon, was withdrawn, but the other defendant, Miss Athole Stobart, pleaded guilty, and was conditionally discharged on payment of £21 costs.

Prosecuting, Mr. S. L. Beaumont asked to withdraw the charge against Miss Chapman, who, he said, was ill at the time of the alleged offences, and therefore could not be said to have "caused" the animals' suffering.

Mr. Beaumont went on to say that on April 20th Inspector S. T. Woodman, of the R.S.P.C.A., Hereford, saw 12 ponies, a foal and a cow, at Bellgate. They were all underfed, and two of the animals were suffering. Next day Mr. McLeod, a veterinary surgeon, accompanied by Inspector Woodman, examined the animals.

In evidence, Inspector Woodman said the cow had an injured hip. The other animals were poor, and some were emaciated. A mare was "just a bag of bones." Witness provided the animals with hay. On subsequent visits he found an improvement, as the animals were being fed corn and hay. The cow was still lame, however, and the mare had died. He understood that the ponies were now in Wales. The cow was still at Bellgate.

Mr. D. McLeod, M.R.C.V.S., of Kington, bore out the evidence, and said the mare and ponies had red worm

Mr. Ian R. Barker, M.R.C.V.S., of Hereford, was the only witness for the defence. He said he examined eleven of the 12 ponies, and three cows, on January 28th. The ponies, though poorly nourished, were not anywhere near emaciated, except for one two-year-old filly. They had red worm. The aged cow was in poor condition chiefly because of senility. It was not lame in January. He sent worm medicine, but did not go to Bellgate again.

Defending, Mr. L. J. Slade put in a doctor's certificate for Miss Chapman's illness, for which she was confined to bed, and which prevented her attending to the animals, he said.

Miss Stobart, continued Mr. Slade, though joint-owner of the farm, had no interest in the animals, which belonged solely to Miss Chapman. The farm—which they had occupied for ten years—was not easy to run, and there was a shortage of labour. It was because of an R.S.P.C.A. report that Mr. Barker visited the farm in January, but no proceedings were taken. He had called Mr. Barker to show there was not a total disregard for the animals. What treatment he had advised had been carried out. The animals had been moved, and the trouble was over.

The chairman, Major J. R. H. Harley, said it seemed that red worm had much to do with it. It was a parasite very hard to eradicate, and many stock-owners had no idea how to deal with it. If Miss Stobart had had to feed all the animals, it seemed that she had more than she could do. She was also likely to be ignorant of red worm. But she had pleaded guilty, and would have to pay £21 costs. She would be conditionally discharged.

ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

FOOT-AND-MOUTH DISEASE:

East-Sussex.—Cuttinglye Poultry Farm, Crawley Down, East-Sussex (July 25th).

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One ewe was killed and two more injured before Mr. H. Deakin, Lichfield Tamhorn Park, came to suspect the hackney stallion he had grazing with his flock as the cause of the trouble. By keeping watch, the stallion was caught attacking a fourth victim.—*Farmer and Stock-breeder.*

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TUBERCULOSIS (ATTESTED HERDS) SCHEME

STATEMENT SHOWING POSITION IN EACH COUNTY AS AT JUNE 30TH, 1950

County	Total cattle as at 3.6.49	Number of Attested Herds as at 30.6.50	Number of cattle in Attested Herds as at 30.6.50	Percentage of Attested Cattle to total cattle
ENGLAND				
Bedford	46,479	116	6,530	14·0
Berks	84,174	525	27,500	32·7
Buckingham ...	113,472	384	20,040	17·7
Cambridge ...	31,593	104	5,390	17·1
Isle of Ely ...	21,202	30	1,430	6·7
Chester	247,492	715	31,040	12·5
Cornwall	275,770	563	18,990	6·9
Isles of Scilly ...	481	89	480*	100·0
Cumberland ...	224,496	1,694	75,290	33·5
Derby	186,246	370	17,820	9·6
Devon	414,027	889	34,990	8·5
Dorset	149,729	778	40,780	27·2
Durham	117,047	540	18,400	15·7
Essex	123,889	595	28,360	22·9
Gloucester ...	193,655	669	34,550	17·8
Hampshire ...	145,909	875	39,370	27·0
Isle of Wight ...	21,182	118	4,830	22·8
Hereford	141,535	379	17,290	12·2
Hertford	59,935	310	17,480	29·2
Huntingdon ...	28,875	40	2,240	7·8
Kent	120,250	507	23,250	19·3
Lancaster... ...	278,129	1,016	37,550	13·5
Leicester	164,788	234	11,970	7·3
Lincoln (Holland)	27,596	3	30	0·1
„ (Kesteven)	69,263	53	2,380	3·4
„ (Lindsey)	159,190	110	5,020	3·2
London	—	—	—	—
Middlesex ...	7,733	36	2,090	27·0
Norfolk	181,444	452	29,580	16·3
Northampton ...	154,023	164	9,650	6·0
Soke of Peterboro'	6,917			
Northumberland...	205,438	359	19,370	9·4
Nottingham ...	108,927	169	7,270	6·7
Oxford	105,698	592	29,140	27·6
Rutland	19,842	15	810	4·1
Salop	282,699	607	34,770	12·3
Somerset	326,083	1,180	57,790	17·7
Stafford	238,355	343	15,180	6·4
Suffolk (East) ...	80,934	249	12,020	14·9
„ (West) ...	38,473	174	9,700	25·2
Surrey	52,004	408	16,740	32·2
Sussex (East) ...	108,009	493	19,120	17·7
„ (West) ...	73,907	372	17,120	23·2
Warwick	151,148	315	16,560	11·0
Westmorland ...	96,904	1,450	56,640	58·4
Wilts	195,868	583	39,590	20·2
Worcester ...	102,638	215	10,680	10·4
York (E. Riding)	135,277	91	3,170	2·3
„ (N. „)	250,022	849	29,620	11·8
„ (W. „)	341,247	1,362	43,890	12·9
ENGLAND TOTAL	6,709,994	22,184	1,003,500	15·0
WALES				
Anglesey	58,054	213	5,990	10·3
Brecon	49,223	184	6,540	13·3
Caernarvon ...	62,281	387	9,990	16·0
Cardigan	76,498	3,810	57,820	75·6
Carmarthen ...	137,205	5,117	96,430	70·3
Denbigh	104,813	678	18,070	17·2
Flint	62,045	161	6,540	10·5
Glamorgan ...	76,998	275	7,450	9·7
Merioneth ...	42,677	1,063	20,610	48·3
Monmouth ...	73,080	220	8,900	12·2
Montgomery ...	99,820	544	18,180	18·2
Pembroke ...	103,379	1,946	42,420	41·0
Radnor	39,308	54	1,500	3·8
WALES TOTAL ...	985,381	14,652	300,440	30·5
TOTAL ENGLAND AND WALES ...	7,695,375	36,836	1,303,940	16·9
SCOTLAND				
Aberdeen ...	224,228	216	19,080	8·5
Angus	66,445	120	14,430	21·7
Argyll	62,415	622	22,100	35·4
Ayr	150,861	2,211	137,170	90·9
Banff	54,644	54	3,940	7·2
Berwick	34,582	60	4,050	11·7
Bute	10,509	327	9,630	91·6
Caithness ...	26,749	154	3,950	14·8
Clackmannan ...	4,647	31	2,060	44·3
Dumfries ...	102,204	1,466	79,840	78·1
Dunbarton ...	16,608	241	12,440	74·9
East Lothian ...	16,065	51	3,430	21·4
Fife	62,843	332	23,360	37·2
Inverness ...	52,346	79	4,250	8·1
Kincardine ...	37,742	59	4,880	12·9
Kinross	8,891	48	3,470	39·1
Kirkcudbright ...	73,438	837	55,410	75·5
Lanark	92,892	1,336	72,640	78·2
Midlothian ...	24,637	211	11,070	44·9
Moray	29,306	52	4,270	14·6
Nairn	8,035	20	1,530	19·1
Orkney	48,598	120	4,150	8·5
Peebles	11,475	170	7,290	63·5
Perth	91,755	262	17,050	18·6
Renfrew	30,721	420	21,920	71·4
Ross-shire ...	39,618	43	2,440	6·2
Roxburgh ...	34,948	66	4,320	12·4
Selkirk	6,417	56	1,550	25·3
Stirling	40,645	404	20,960	51·6
Sutherland ...	9,878	80	720	7·3
West Lothian ...	15,281	143	7,280	47·6
Wigtown	71,953	640	55,310	76·9
Zetland	7,494	1,894	6,420*	100·0
SCOTLAND TOTAL	1,568,570	12,825	642,410	41·0
TOTAL GREAT BRITAIN	9,263,945	49,661	1,946,350	21·0

* All cattle herds in Zetland and the Isles of Scilly are Attested.

This figure represents the number of animals in the last test of the herds.

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ANTHRAX HAVOC AT MINK FARM

The Daily Telegraph reports that anthrax has killed nearly £7,000-worth of stock at the Yeo mink farm, near Yeovil. In six days 598 animals died out of a total of 1,035. The farm was started four years ago by two former Polish naval officers, who built up a substantial export trade. Ministry of Agriculture officials visited the farm to supervise precautionary measures.

LIVESTOCK EXPORT GROUP

In the course of its report for the year ended March 31st, 1950, the General Committee of the Livestock Export Group states that the past year has been notable for the reorganisation of the Group's administration, consolidation of its policy, and for the strengthening of the already firm liaison between the Group, the Board of Trade and the Ministry of Agriculture. The Executive found it desirable that representatives to the General Committe of the Board of Trade, Ministry of Agriculture and the Scottish Department of Agriculture should also attend their meetings. By their regular attendance, these departments of the Government have shown their earnest desire to co-operate with and assist the Group in every way possible and the Executive wish to place on record their gratitude for the services made available to them.

Import Regulations.—Through the assistance of Government Departments, the Group has been successful in obtaining the dispensation with quarantine in this country before shipment of stock for South Africa, the introduction of S.19 vaccinated cattle into Canada, the withdrawal of the requirement of the johnin test formerly applicable to cattle and sheep for Canada, and other relaxations of import regulations generally. The Group has also been given guidance with regard to regulations relative to the construction of pens and boxes used in the transport overseas of live animals, as well as a fair measure of assistance in regard to exports to Argentina.

Freight Charges.—The Group still holds the view that freight charges for all types of livestock, thoroughbreds, etc., are too high and continue to act as a deterrent to the expansion of the trade. Time and again shippers and exporters have expressed disappointment at the many enquiries received from prospective overseas clients who cancel orders when notified of the cost of freight from the U.K. The demand for the medium-priced animal would be very much greater if freight, box, etc., charges were reduced. It is obvious that the present high level of these charges indicates the continued frustration of business.

However, despite high freights, there is no reason whatever, and this view is shared by all exporters, why, in the livestock export trade, one sphere—the export of thoroughbreds—is regarded in a different light. To all parts of the world, with the exception of South America, a fixed rate is charged for exporting thoroughbreds, irrespective of value. Bloodstock shipped to South America is charged *ad valorem* on a sliding scale—£250 for a horse valued at between £4,000 to £5,000. Why this differential treatment?

The matter has been given close attention by the Executive whose representatives met those of the U.K., Brazil and River Plate Conferences. The outcome is that the Conferences adhere to their previous decision that they are unable to reduce the lower rates, but those applicable to thoroughbreds valued at over £5,000 have now been fixed at £400—previously such rates were left "to be agreed" by the Conferences, the exporting agent having no idea as to what the charge would be. Doubtless, if the Conferences persist with this policy, business will be lost to them, as far as animals of exceptionally high value are concerned, through the exporter resorting to air transport, which offers numerous advantages.

The Group looks to the Board of Trade, who have been supplied with details of its enquiries into the costs of freights and the withholding of import licences by certain countries, to give it every support in trying to overcome these difficulties in order to increase exports, which has been the cry for the past five years and will be for some time to come.

Export and Import of Cattle Semen.—A Sub-committee appointed by the Executive has submitted written evidence on the export and import of cattle semen for the purposes of artificial insemination to the Committee appointed by the Minister of Agriculture and the Secretary of State for Scotland.

Briefly, it is recommended that the export of semen, if authorised, should only be allowed in circumstances under which the Ministry is satisfied that it will be applied under scrupulous supervision in the country of reception. A proposal has been advanced by the Sub-committee that, within the British Empire, certain territories, subject to their agreement and co-operation, be selected where there would be an efficiently organised and controlled A.I. service which would continue for a sufficient period to study results during which all other exports and imports of cattle semen should be allowed only for experimental purposes under the strictest control.

Identification and Health of Stock Exported.—Complaints continue to be received by the Ministry from the Candian Veterinary Authorities of incorrect information being quoted in documents accompanying animals imported from Great Britain. Certain specific cases have already been drawn to the attention of Breed Societies and the export agents concerned. The incidence of mange in cattle shipments to Canada is also giving rise to anxiety and might quite easily lead to all stock being required to pass through quarantine; such a step would greatly retard the despatch of animals and, in the case of animals from Scotland, add to the cost of export by incurring quarantine fees.

The Committee view these matters with the gravest concern and strongly recommend that all those involved in the shipment of animals should take the utmost care in supplying correct information for and in the completion of necessary documents, and, where cattle are selected for export, to segregate and treat them with a suitable curative dressing until called forward for shipment.

Quarantine and Export.—The number of animals which, during the year, passed through quarantine and subsequently were shipped was 690 for which 31 quarantine periods were necessary. Figures of stock thus exported, and importing countries concerned, are given.

The Ministry is taking steps to make further improvements to the Glasgow Quarantine Station, while the new London Quarantine Station at the Royal Albert Dock is nearing completion and should be ready by the early summer.

Membership and Finance.—The present membership figure stands at 132. The fee for Associate Membership is One Guinea. The Committee have carefully examined the figure of expenditure for the period under review to assess the required amount of income which it is considered should be £1,000 per annum. To raise this amount, the Committee have decided to introduce a nominal basic subscription rate and a system of levy on exports per head (cattle 7s. 6d.; sheep, pigs, goats 2s. 6d.; horses (thoroughbreds excepted) and ponies 7s. 6d.) applicable to breed societies, and a sliding scale of subscriptions for exporters and shippers, dependent upon the number of stock shipped by them in the course of the year. Details of these proposals have already been notified to members.

Conclusion.—With more firmly established relations between the Group and the Government Departments mentioned earlier in the report, and with the ever-widening recognition of the Group's work in overseas stock markets, membership of the Group has become increasingly valuable to all concerned. The Committee feel that as overseas trading becomes more competitive, it is even more essential that British stock shall be prepared for export and shipment with the smoothness and speed which will merit the same confidence and admiration which the stock itself has so long justified. Only by united thought, by vision, and above all by painstaking work can this be achieved. The Committee feel that the Group can offer its members wholehearted service on these lines.

STANDING COMMITTEES, 1949-50

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Members co-opted to serve on both Committees: J. Craig, J. L. Cridlan and The Lord Lovat, D.S.O., M.C.

* Members of the Executive Committee.

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THE FARM HORSE: "FOLLY OF PENDING DISAPPEARANCE"

Farm horses, including brood mares, have dropped below the 300,000 mark in England and Wales. The June returns of last year showed only 5,000 heavy horses under one year old. The average age of horses working on our farms is probably ten to twelve years.

"These are shattering figures," comments "L. M. F." in the July 25th issue of *The Farmer and Stock-breeder.* "They mean that we are unable even to recruit sufficient horses to maintain the present depleted numbers, and that in five years' time many of those who still use horses will be unable to obtain them, unless this downward tendency of our horse-breeding is drastically reversed.

"For a large number of farmers, especially on the heavier lands and in the wetter areas, this will result in higher production costs, and even in fundamental changes in their farming policy. Many a farmer in the North of England, for example, keeps a horse for such odd jobs as lifting roots as he wants them and feeding them to his stock.

"It is not a question of horse *versus* tractor. That is one of the most barren debates that ever wastes the evening of a Young Farmers' Club. We can't farm in these days without tractors, and everyone knows that for the majority of jobs they are quicker and cheaper. It does not need a Senior Wrangler to prove that if a tractor does a job in eight hours for which a team of horses requires 30 and the man's wages are the same, the tractor must be cheaper. But farm loss and profit is not built up in that way. There are jobs that must be done and there are occasions when the horse can do them better than the tractor, which may not be able to do them at all at that particular time. Or the size of a job may mean that the horse is a more economical unit of power for getting it done.

"If, therefore, the horse is kept to do these jobs, it then becomes economic to use him as well for some tractor jobs. Leading hay or corn, for example. After all, the gang on the rick can't work above a certain speed, so, unless it is a very long haul, a horse or two working with the tractors, even on a highly mechanised farm, does not in practice represent a waste of time, whatever the statisticians may prove on paper. There are still many young, progressive farmers who keep horses as well as tractors because they say they cannot manage without them. They are almost certainly right, as we shall discover if we are foolish enough to sit by and let the farm horse disappear."

* * * * *

HEREDITARY SUSCEPTIBILITY TO CARCINOMA OF THE EYE

Hereditary susceptibility to carcinoma of the eye in range cattle has been demonstrated by studies recently concluded by the BAI.

Records covering a 25-year period made at the U.S. Range Livestock Experiment Station at Miles City, Mont., show that 73 cows developed eye cancers; an incidence of 4·7 per cent. Approximately 20 per cent. of affected animals were related to others infected, *i.e.*, were dam and heifer calf. In one family, carcinomas have been found in each generation since the beginning of the study in 1926. In individuals of one closed-line breeding, the cancer incidence approached 10·2 per cent.

The report recommends removal and slaughter of infected cows and marketing offspring of these for slaughter as early as practical. Breeders are warned of the importance of selecting a herd sire in which there is no history of eye cancer among progenitors.—*Vet. Med.*

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the N.V.M.A.

PANTING IN CATTLE AND NON-SWEATING IN HORSES

Sir,—In his letter published in *The Veterinary Record* of May 13th, 1950, Sir Frank Ware remarks upon the similarity of panting in cattle and non-sweating in horses. My limited experience of the affection in cattle tends to support this view, bearing in mind that in cattle the sweat mechanism is poorly developed whereas in horses it is the reverse. Perhaps the results of more extensive observation and study of non-sweating may help in this discussion. The clinical history is fairly regular: there is a sudden rise in body heat followed at once by the normal physiological response of panting and sweating. If these fail to restore heat balance they become exaggerated with intense polypnoea and profuse sweating. This is soon followed by a partial or total cessation of sweating and polypnoea remains a continuous distressing symptom even at rest. The cutaneous vessels play an important role in regulating temperature but the capillaries lose tone very rapidly with continued exposure to heat and actinic rays and remain in a state of dilatation. My interpretation is that excessive water lost by prolonged and profuse sweating disturbs the water balance, with a shift from the not so essential reserves to the vital tissues and blood. The subcutaneous connective tissue is one of the first to suffer and when this reserve falls below a certain level the sweat glands cannot function. Kidney action is stepped up to compensate for the reduced skin and sweat gland action and this leads again to abnormally high water output which delays and, unless controlled, may prevent the renewal and redistribution of water reserves.

The initial rise in body heat which starts this train of symptoms may be of somatic or climatic origin, and in dogs and sheep, animals like cattle with a poorly developed sweat mechanism, polypnoea or panting is a frequent occurrence and sufficient to restore the normal balance between the heat of the body and environment. In the horse body heat may increase quicker than the heat regulating mechanism of the body can adjust itself, either by over-exertion in, or prolonged exposure to, an unusually hot, humid and still atmosphere. All horses, but particularly unfit or unacclimatised ones, are susceptible to the effects of exertion in hot climates, and confinement in ill-ventilated, cramped quarters intensifies the effect of exposure. Such climatic conditions prevail in the coastal zones of the tropics and restricted quarters are the rule during transport by ship or train. When ship or train is in motion there is usually sufficient movement of air to aid heat dissipation without the condition progressing beyond an exaggerated physiological reaction, but delay in ports such as Bombay, Colombo, Madras and Calcutta with an absence of breeze frequently results in non-sweating. Any factors which tend to raise basal metabolism—such as disease, work, or high protein feed, or conditions which increase water loss (purgation, polyuria, haemorrhage, etc.), or which interfere with heat loss by radiation, conduction or water vaporisation from the skin or lungs, help to dislocate body heat control. Any of these factors may determine the onset of non-sweating and explain why some and not all similarly exposed horses become affected. Imported horses are most frequently subjected to such conditions and therefore are the chief sufferers, but the disease is by no means confined to them. I consider water imbalance to be the primary cause of non-sweating, but after it has existed for some time secondary effects are shown in the cutaneous circulation, ductless glands (particularly the thyroid), the heart, the liver and the spleen.

This theory of causation, given in bare outline, indicates the principles of control and treatment. These are: avoidance or removal of the immediate cause of the rise in body heat, the renewal and redistribution of water reserves in the body, and the increase of powers of water retention. Horses should not be imported or moved by rail during the hottest and most humid seasons, but as such adverse conditions cannot always be avoided and may occur at any time of the year, fans should be fitted to horse-boxes on ship and train. High protein feeds should be reduced to a minimum, particularly for a couple of days before racing, or during transit under these conditions, and all fevers, however low and transient, should receive specific treatment. Removal inland away from the hot humidity of the coastal areas and reduction of work are usually effective in alleviating the disease but not always feasible. This procedure and the local effect of cold spells such as occur in January and February in Calcutta, frequently produce a spontaneous remission, but this is, as a rule, only temporary. Cold tones up the cutaneous vessels which in the disease become greatly relaxed and the same contractile effect is often seen from the bracing which the pressure of the saddle and girth exert. Systemic treatments reported over many years have been numerous and varied, but the only consistent results have been from saline solutions given frequently in large quantities by stomach tube. When iso- or hypotonic solutions are given water reserves are replenished, but this gives only temporary relief unless such reserves can be maintained. A number of drugs, particularly the anti-diuretics, assist water retention, but recently anti-histamine preparations have given me very promising results; they immediately reduce and quickly stop the distressing panting, but normal water balance with the return of sweating takes from a few days to three or four weeks to become established.

Yours faithfully,

Royal Calcutta Turf Club, T. F. Arnold.
11, Russell Street, Calcutta, 16.
July 11th, 1950.

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THE DEHORNING OF ADULT CATTLE

Sir,—In connection with the letter from the Chief Secretary, R.S.P.C.A., in your issue of July 22nd, may I point out that in my opinion the method of dehorning there advocated offends against Schedule 6 of the Animals Anaesthetic Act. In accordance with the terms of that Schedule, the animal should be under the influence of the anaesthetic, general or local, during the whole of the operation—a condition which obviously cannot obtain when rubber rings are used.

Yours faithfully,

23, Queen's Gate Gardens, Thomas Lishman.
London, S.W.7.

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ATTESTATION: IS IT A GOOD POLICY?

Sir,—I have read with interest and extreme satisfaction Mr. P. L. le Roux's letter in *The Veterinary Record* of July 22nd.

I must confess that, as a practitioner, I am not greatly concerned with attestation of cattle, but paras. 5 and 6, in which Mr. le Roux emphasises the importance of the rôle played by parasites in lowering the resistance of tissues to infection by a virus and probably other bacterial infection, are, in my experience—which covers over 20 years with canine subjects—extremely sound.

I have felt for many years that no headway ever can be made in the prevention and even permanent cure of these specific and possibly also of the so-called non-specific diseases until due attention first is paid to these earlier pre-disposing factors.

It all comes down to this. Examination in order to make a complete diagnosis is essential. A glance at a patient and observing superficial conditions is not enough. An effective cure will not be gained by treating one thing and leaving another.

I make this statement in view of the outstanding success I have achieved as a result of regular and systematic eradication of parasites following a laboratory diagnosis which must be thoroughly and capably carried out. In this connection, I should like to acknowledge the great assistance I have received, over a long period of years, from Dr. Tom Hare.

Yours faithfully,
DENYS DANBY.

55, Elizabeth Street, S.W.1.
July 24th, 1950.

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SIR,—Mr. John Francis, in *The Veterinary Record* of July 29th, 1950, records that my statement in your issue of July 1st, relating to Danish notifications of human tuberculosis, does not support my conviction that decreasing tuberculosis in cattle is leading to an increase in human infection. For the benefit of Mr. Francis and others I will restate certain of the figures which were published on July 1st.

1920	...	2,962	1943	...	3,348
1921	...	3,186	1944	...	3,343
1922	...	3,017	1945	...	3,460
1923	...	2,893	1946	...	4,122
1924	...	3,307	1947	...	3,522
		5)15,365			5)17,795
		3,073			3,559

I have hesitated to publish such mathematical detail, but these figures indicate to me that, comparing the years 1920 to 1924 and 1943 to 1947, the notifications have increased by about 500 per year in Denmark, and this in spite of B.C.G. vaccine and Mr. Francis' contention that removing tuberculosis from cattle will improve human figures. My opinion remains unaltered: and remember that in 1920 no cattle were tested, and in 1947 about 95 per cent. were tested.

Mr. Francis states that "eradication of bovine infection does not lead to a higher death-rate in humans," but a notification is potentially a death, and it is only after years of treatment which sterilises the patient from his usual activities that he will be restored completely or partially to a useful way of life. The foundation of my belief is that we are removing tuberculin from milk and beef, and thus making human beings more susceptible to infection. Prevention is better than any treatment.

Further, "Mr. Pitcher contended that eradication of bovine tuberculosis was bad because it removed some hypothetical immunising substance from pasteurised milk. There is absolutely no experimental or epidemiological evidence to support this view." I must refer Mr. Francis back to the table above. That is not an experiment but a statement of plain fact.

Again, "Elliot has drawn attention to the recent increase in pulmonary tuberculosis in Scotland. He wonders if it was introduced during the war by the Polish migration." I can only reply that England was swarming with Poles, but incidence of tuberculosis has continued to decline, with the exception of London, which shows a small increase due undoubtedly to housing conditions as in Glasgow. But the rest of the country, urban and rural, shows steadily improving figures. In Scotland urban and rural areas show a steep increase in notifications.

Mr. Francis further quotes Mr. Rainey as saying that "he believes that the presence (or absence) of the bovine tubercle bacillus in cow's milk may account for the different death-rate from respiratory tuberculosis in Scotland and England." I do not think the bacillus would do any good, but in children a great deal of harm, and this justifies pasteurisation. I do not agree with pasteurisation as a principle, but as an economic necessity.

Again, "It is, therefore, fantastic to cast doubt on the policy of attestation because it removes virulent tubercle bacilli from milk when others are devoting so much propaganda effort to achieve the same result by pasteurisation." I have not advocated virulent tubercle bacilli, but "tuberculin" in the milk, and this I am convinced is not destroyed by pasteurisation.

Further, "Sigurdsson, 1945, has shown that 40 per cent. of cases of pulmonary tuberculosis in country districts in Denmark may yield bacilli of the bovine type." In 1945, 90 per cent. of the total milk-producing cattle in Denmark were T.T. If the tuberculin test is correctly carried out there is something wrong somewhere. It looks like a support for pasteurisation.

Quoting Mr. Rainey—"More certain than giving people leave to drink raw milk from tuberculous cows"—I believe that three-monthly clinical examinations would eliminate most of the risk. If this is not satisfactory, then compulsory pasteurisation should be required.

To prove the value of B.C.G. vaccine would take 25 years and we have a better proved and natural method in our hands. To me it is frankly idiotic to eliminate a proved system (note results of absence of tuberculin in Scotland, Denmark and Channel Isles, its presence in England) for a dubious vaccination. I am no bacteriologist, but I thought the tubercle bacillus has no exo- or endotoxin, so how can a vaccine give immunity? And how can it be possible to be certain that a child is free from tuberculosis infection when it is vaccinated?

One further quotation: "Veterinarians and farmers should be proud of the good and relatively economical progress being made by the policy of attestation." I would have supported Mr. Francis in this a year ago, but after studying the position thoroughly I feel convinced that, notwithstanding the vast concentration of work that has gone in to the grading up of herds to T.T. standard, and done with a good conscience, the results are precisely opposite to the ends anticipated.

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THE POSITION IN JERSEY

In further reply to Mr. F. B. Edwards, I enclose figures of TB. deaths and notifications for the years 1920 to 1949. In 1920 no tuberculin testing was practised; in 1949 all cattle were attested. The population of Jersey numbers 50,000.

These figures show, unquestionably, that human tuberculosis infection has increased to a very serious extent since the island has been attested.

I have to thank R. N. McKinstrey, Esq., O.B.E., M.D., D.P.H., Medical Officer of Health, Jersey, for these figures.

Island of Jersey

Date	TB. deaths per 1,000 All forms	TB. deaths per 1,000 Non-pulmonary	TB. admissions to hospital
1920	1·12	—	—
1921	1·31	—	—
1922	1·3	—	—
1923	1·00	—	—
1924	1·3	0·2	—
1925	0·98	0·28	9 (year of opening)
1926	1·08	0·18	8
1927	0·98	0·06	11
1928	0·94	0·20	15
1929	1·10	0·16	6
1930	0·88	0·12	4
1931	0·99	0·23	1931–2–3, all beds utilised in diph-
1932	0·89	0·16	theria epidemic
1933	0·97	0·16	
1934	1·17	0·16	26 (hospital enlarged)
1935	0·73	0·15	42
1936	1·17	0·24	48
1937	0·67	0·13	44
1938	0·59	0·08	32
1939	0·61	0·10	44
1940	1·19	0·07	64 (the island was German-occupied
1941	1·28	0·17	45 June 1940–June 1945)
1942	1·25	0·10	31
1943	1·40	0·23	69
1944	1·20	0·15	72
1945	0·90	0·15	45
1946	0·54	0·04	51
1947	0·87	0·11	70
1948	0·68	0·04	77
1949	0·54	0·0	70

Yours faithfully,
L. PITCHER.

66, Coningsby Road,
High Wycombe.
July 29th 1950.